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ABSTRACT

The report describes goals and accomplishments of a project designed to develop an assessment and training system for secondary level severely handicapped students. The project focused on developing program-related assessment in functional self-care and community living skills. Ten project objectives and their sub objectives are listed in the introductory section, along with information on the theoretical basis of the Community Living Assessment System (CLAS) and its accompanying curriculum materials. Development of CLAS content through task analysis of core skills and clusters and organization of content into levels of complexity is described. Standardization and validity factors are noted. In the final section, five contributing philosophical orientations are identified (emphasis on normalization, direct instruction, functional skills, interactive processes, and task analysis) and an overview of the curriculum is presented. Results of a field test of the curriculum with 60 teachers and 240 severely/profoundly retarded students were largely positive and were used to revise lesson plans. (CL)

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Final Report

Evaluation and Training of Community Living Skills for Severely Retarded Adolescents

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Introduction

A new era in the education of handicapped children commenced with the signing of the "Education for All Handicapped Children Act" (P.L. 94-142). This legislation requires each state to assure that every handicapped child be provided with an appropriate education. Compliance with this Act will be especially challenging with respect to educational programs for severely handicapped students.

This completed project is aimed at development of a uniquely integrated assessment and training model for secondary level severely retarded students. Specifically, the focus of this project is the development of an assessment and training system which incorporates instructional variables into the assessment format in order to accurately diagnose training needs. The content areas selected for the instrument are functional self-care and community-living skills. These areas have been selected because of their great importance for the community adjustment of severely handicapped people and the tremendously low skill level typically exhibited in these areas by severely handicapped people. A set of curriculum materials were also developed to guide use of the scale for diagnosis, program planning, and subsequent assessment-based training.

The decision to focus this project in the area of program-related assessment is derived from the tremendous disparity that currently exists between diagnostic and training technology. During recent years, we have made great strides in the development of instructional techniques for severely retarded people. Analogous progress, however, has not yet been made in the realm of diagnosis. As McDaniels (1977) has stated in a recent

memorandum on research priorities from the Division of Innovation and Development of the Bureau of Education for the Handicapped, "Methods of assessing the needs and progress of handicapped children are often inadequate, and methods of evaluating programs for handicapped children are often lacking" (p. 1).

Project Narrative

The following narrative is divided into three sections: project objectives, overview of test development and standardization activities, overview of curriculum development and field-test procedures. The first section specifies the objectives which guided the project over the entire length of time for which funding was provided by the Office of Special Education. The second section describes the conceptual foundation of test development activities and all accomplishments that have been achieved in the areas of assessment instrument development, test standardization, and instrument validation. The final section provides philosophical basis for instruction of severely and profoundly retarded persons, describes the components of the curriculum, and documents a field-test of the curriculum with a sample of severely and profoundly retarded persons and their special education teachers.

Project Objectives

Objective 1: To Determine the Content of the Preliminary Form of the Community Living Assessment System (completed 11/78).

Sub-Objective 1a: Review content in all relevant domains.

Sub-Objective 1b: List all content to be represented in the assessment system.

Objective 2: To Task Analyze the Content Identified in the Eating, Dressing, Personal Hygiene, Household Chores, and Food Preparation Domains (completed 6/79).

Sub-Objective 2a: Write detailed task analyses in all domains.

Sub-Objective 2b: Organize content into varying item lengths.

Objective 3: To Determine "Level of Complexity" of Core Skills and Other Behaviors in the Task Analyzed Skill Statements (completed 8/79).

Sub-Objective 3a: Perform staff and consultant ratings.

Sub-Objective 3b: Analyze data.

Objective 4: Develop an Item Sampling Strategy (completed 8/79).

Objective 5: Develop and Evaluate a Preliminary Form of the Assessment System in the Eating, Dressing, Personal Hygiene, Household Chores, and Food Preparation Domains (completed 11/79).

Sub-Objective 5a: Develop preliminary form of instrument in each of the five domains.

Sub-Objective 5b: Field test instrument with approximately 80 severely retarded adolescents and adults in Oregon.

Sub-Objective 5c: Analyze data from field test.

Objective 6: Develop and Evaluate the Revised Form of the Assessment System (completed 6/80).

Sub-Objective 6a: Develop revised form of instrument in five domains.

Sub-Objective 6b: Standardize instrument with 150 severely retarded adolescents and adults in Oregon, Washington, and California.

Sub-Objective 6c: Analyze data from field test/standardization.

Objective 7: Validation of Community Living Assessment System (completed 5/81).

Sub-Objective 7a: Select validity tasks.

Sub-Objective 7b: Develop skill training programs on tasks selected.

Sub-Objective 7c: Train 50 severely retarded adolescents and adults on validity tasks.

Sub-Objective 7d: Analyze validity study data.

Sub-Objective 7e: Revise instruments as required by empirical findings.

Sub-Objective 7f: Standardize revised instruments with new sample of 75-100 severely and profoundly retarded adolescents.

Objective 8: Develop an Examiner's Manual to Accompany the Community Living Assessment System (completed 8/81).

Sub-Objective 8a: Write introductory section to manual.

Sub-Objective 8b: Write instructions on test procedures for the assessment instruments.

Sub-Objective 8c: Write section on interpretation of test results.

Objective 9: Develop a Curriculum Guide to Accompany the Community Living Assessment System (completed 1/82).

Sub-Objective 9a: Describe the theoretical structure of the Curriculum.

Sub-Objective 9b: Write two levels of the Curriculum within the Self-Care and Domestic Skills domains.

Objective 10: Evaluate the Impact and Utility of the Community Living Assessment System, The Examiner's Manual, and the Curriculum Guide (completed 8/82).

Sub-Objective 10a: Select field study participants.

Sub-Objective 10b: Implement field study, including in-service training, follow-up and evaluation of participants.

Sub-Objective 10c: Develop materials to evaluate the Community Living Assessment System, the Examiner's Manual of the Assessment System, the Curriculum Guide and specific lessons within the Curriculum Guide.

Sub-Objective 10d: Evaluate field study using formative and summative information.

Sub-Objective 10e: Prepare prototypes of the final forms of all components of the Assessment and Training System for production and ultimate dissemination and utilization.

Purpose of Instrument

The Community Living Assessment System (CLAS) was designed to measure the training resources required for severely retarded adolescents and adults to live in community settings. The goal of this individually administered

instrument is to provide information about the process of skill acquisition and learning style of severely retarded persons.

The instrument is specifically designed for mentally retarded individuals who lack most or all of the skills that are measured by current assessment instruments. The scale requires no reading, writing, or expressive verbal abilities by the examinee. The instrument does require the examinee to interact with objects and perform skills that are commonly found in a community residence. The scale is appropriate for adolescents and adults, for completely naive, unskilled learners, and competent severely retarded persons. It is appropriate for use in classrooms, group homes, foster homes, intermediate care facilities, and private residential facilities.

The content of the CLAS includes: eating, dressing, and personal hygiene in the self-care domain; and household chores and food preparation in the domestic domain. These skills are considered the most functional and essential for successful adjustment in community residential facilities. Items are arranged in an easy-to-hard sequence to assess a range of skills from eating finger food to washing clothes by hand or preparing lunch.

Product vs. Process Assessment

Recent developments in instructional technology have dramatically increased educational/habilitational options for severely handicapped individuals. These instructional techniques have allowed many severely handicapped individuals to remain in the natural home or to be placed in community residential facilities. Unfortunately, equal progress has not yet been made in the development of assessment strategies to guide the delivery of instructional procedures. Current assessment strategies and instruments have

not incorporated the innovations found in instructional procedures. Especially lacking is a methodology for directing teachers in how or what to teach their students.

Most available measures of daily living competence employ a "product" approach to assessment. These measures are limited to static descriptions of skill levels. These "product-oriented" assessment procedures tend to underestimate skill levels because severely handicapped persons have typically lacked systematic instruction on the skills tested.

A second approach to assessment is called a "process" approach. Focus is placed on the individual's ability to benefit from instruction during a testing situation. The assessment question is not, "Does John tie his shoes?" but rather, "What will it take to teach John to tie his shoes?" Process measures attempt to simulate the training situation and provide assistance to elicit a given response. This "process" method of assessment has direct implications for instructional placement and training.

Relationship Between Test and Curriculum

Assessment information is only truly valuable when the results can be interpreted to guide the delivery of education/habilitation services. If a strong link exists between assessment information and curricular strategies, the test can be used to direct what to teach, where to begin teaching, and how to teach. Attention to specific learning styles and the level of assistance needed to achieve skill mastery becomes the ultimate goal of assessment.

The CLAS was developed to link assessment strategies with instructional procedures. The skills assessed in the scale are sampled from the content of the curricular materials. The examinee is asked to perform a series of

skills, rather than simply being rated by the examiner as in traditional criterion-referenced assessment scales. If the individual does not perform the skill, a series of systematic instructional procedures is initiated to determine the level of assistance required to perform the skill. The instructional procedures are the same as those used teaching new skills. The objective of CLAS is to determine the examinee's ability to learn and profit from an optimal instructional experience. The precise level of assistance needed to perform the skills is determined and can then be used for general placement in the curriculum.

Summary

Severely handicapped individuals will continue to be served in public and private education/habilitation agencies. It is safe to assume that great increases in resources will not be forthcoming to compensate for poor instructional programs. Therefore, it is critical that placement and training decisions be made from a solid background of empirical information. The CLAS and the accompanying CLATS curriculum materials will fill the gap that currently exists between assessment information and instructional needs. The research foundation of the CLAS suggests that it is possible to predict the general level of resources needed to accomplish independent living skill training for these individuals.

Summary of CLAS Development Procedures

Elaboration of Content

Content of existing assessment instruments and curricula materials was reviewed and 140 skills were selected from the self-care and domestic domains. Each skill was task analyzed into component parts called core

skills, clusters, and extended clusters. Core skills are the most basic motor behaviors used to perform daily living skills. In the following example, "core skills" are underlined and represent individual steps for filling a bucket with water from the task "Mops Floor."

Fills Bucket with Water

1. Grasp rim of bucket
2. Place under faucet
3. Grasp faucet
4. Turn on water
5. Turn off water when bucket is 1/2 full
6. Grasp rim of bucket
7. Lift out of sink
8. Place on floor

There were a total of 10 "core skills" found in the self-care and domestic living domains. These include:

Core Skills

1. Move - To cause the body, body parts, or an object to change location in space.
2. Grasp - To take hold of an object and be able to manipulate it; by clasping with fingers (pincer grasp) or the entire hand (full-hand).
3. Place - To cause a body part or an object to come to rest in a specified location.
4. Pull - To exert a force on a body part or an object which moves or attempts to move the body part or object in the direction of the source of the force.
5. Push - To exert a force on a body part or an object to move or attempt to move the object in the direction of the source of the force.

6. Lift - To move a body part or an object in an upward direction.

7. Turn - To move a body part or an object in a circular manner around some central point of the body part or the object.

8. Tilt - A partial turn used to cause something to slant, tip, or lean.

9. Rub - To move objects (or body parts) with pressure back and forth over each other; one object may be stationary and the other(s) moving, or all may be moving.

10. Insert - To move a body part or an object through something or to have it come to rest within.

All tasks were also organized into larger, functional units of behavior called clusters, because much training of severely retarded persons is accomplished with short sequences of skills. A cluster is defined as a sequence of 2-4 contiguous core skills that: (1) a meaningful functional relationship; (2) constitutes an identifiable and potentially teachable segment of a whole task; and (3) contains one step that is clearly an "action" step. This "action" step is the key behavior to be performed in the cluster and is preceded by one or more set-up steps. In the example below, the first cluster includes: "grasp rim of bucket," "lift bucket," and "place bucket under faucet." Steps 1 and 2 are clearly preparation for the action step of placing the bucket under the faucet.

Task Analysis: Mopping a Floor

Clusters	Core Skills
"Put the bucket under the faucet."	1. Grasp rim of bucket
	2. Lift bucket
	3. Place under faucet

"Fill the bucket 1/2 full."

4. Grasp faucet
5. Turn on water
6. Turn off water when bucket is 1/2 full

"Put the bucket on the floor."

7. Grasp rim of bucket bimanually
8. Lift out of sink
9. Place on floor

"Put the sponge into the water."

10. Grasp mop near top of handle with dominant hand
11. Insert sponge end into water

After reducing the content of the scale into core skills and clusters, still larger units of behavior called "extended clusters" were identified. An extended cluster is a functional group of 2-3 clusters that represents a longer sequence of behavior. In the following example, the task has been divided into three levels: clusters on the left side; core skills describing the elementary steps of the task in the middle; and extended clusters on the right side.

Mopping a Floor

Clusters	Core Skills	Extended Clusters
"Put the bucket under the faucet."	1. Grasp rim of bucket 2. Place under faucet	
"Fill the bucket 1/2 full."	3. Grasp faucet 4. Turn on water 5. Turn off water when bucket is 1/2 full	"Fill the bucket half full and put it on the floor."

6. Grasp rim of bucket bimanually

"Put the bucket on the floor."

7. Lift out of sink

8. Place on floor

9. Grasp mop near top of handle with dominant hand

"Wet the mop head and squeeze it out."

"Put the sponge into the water."

10. Insert sponge end into water

These longer sub-units or extended clusters were identified in order to simulate potential training strategies and to increase the ceiling of the assessment instrument by discriminating between more competent severely retarded persons.

Organization of Content into "Levels of Complexity"

Task complexity was determined by a three-stage process. First, detailed operational definitions of task complexity were produced. Second, these operational definitions were used by knowledgeable raters to evaluate the complexity of task content on a two-point rating scale. Third, the results were analyzed to determine a hierarchy of tasks based on complexity.

Operational definitions of task complexity include four basic dimensions. Bellamy, Inman, and Horner (1979) define these dimensions as: the degree of physical differences between stimuli; the degree of specificity of criterion statement; simultaneity of stimuli and motor requirements; and manipulation requirements of the tasks. These four dimensions were collapsed into two broad categories: (1) discrimination dimensions; and (2) manipulation requirements. Detailed operational definitions were produced for these dimensions

of task complexity and general examples were developed to assist raters in using the definitions to objectively rate task content.

In the second step of the process, three project staff independently rated all potential items in the self-care and domestic domains. Each core skill, cluster, and extended cluster was rated on a two-point scale, simple or complex, on both the discrimination and manipulation dimensions. In order to establish the reliability of project staff, three teachers of the severely handicapped also rated a representative sample of tasks and the results were correlated.

In the third step of content organization, all tasks in the self-care and domestic domains were ordered according to complexity. This heirarchy provided a basis for sampling representative content and allowed the test to simulate the "easy-to-hard sequences" critical for enhancing the learning potential of severely and profoundly retarded persons.

Test Item Sampling

A strategy was identified to convert a representative sample of self-care and domestic skills into actual test items. The sampling strategy was designed to represent: (1) the core skills in relation to their proportion in the domains; (2) different lengths of items in both domains, e.g., "core skill," "clusters," and "extended clusters"; and (3) two levels of complexity, e.g., simple and complex, in both domains.

Content. Test items were selected rrom the population of skills in the self-care and domestic domains. The self-care domain includes the three sub-domains of eating, dressing, and personal hygiene. The domestic domain includes household chores and food preparation. Content was selected based on the proportion of "core skills" across domains. Thus, a sample of the

core skills of grasp, push, pull, turn, insert, etc. is represented in the test with specific content taken from the five content areas.

Length. Three different lengths of items -- single step "core skills," "functionally related clusters," and lengthy groups of clusters or "extended clusters" are included in the item format. These different lengths of items were selected in the following proportions: core skills - 8 items or 33% of the test, clusters - 15 items or 50% of the test, extended clusters - 5 items or 17% of the test.

Difficulty. Also represented in the test are easy and difficult examples of content. Each core skill, e.g., grasp, push, turn, etc. was selected to represent the proportion of easy and difficult examples in the domain. Approximately 50% of the items are easy and 50% are difficult.

The result of this item sampling strategy is two equivalent forms of the assessment instrument, Form A and Form B. Each form consists of 28 items and systematically incorporates content, item length, and level of difficulty.

Item Format

Each test item is entirely scripted to provide detailed instructions to the examiner. The basic item format is consistent throughout both forms of the test. There are three major sections in each test item. The first section includes general information about the content, unit length to be tested; and the test materials. The second section describes the initial set-up, and the criterion statement for correct performance. The third section provides detailed descriptions about how to deliver the test instructions and score the test protocal.

Standardization

Subject sample. Both forms of the CLATS were standardized on a sample of 131 severely and profoundly retarded adolescents and young adults. This sample was stratified in order to ensure adequate representation across the full range of the population. Stratifiers included: sex, age, functional level, and type of residential placement.

Age was differentiated as 13-21 and 22-40 years. Functioning level in daily living skills was measured by a criterion-referenced instrument completed by knowledgeable others in the trainee's environment. This 18-item instrument with daily living content organized in an easy-to-hard sequence yielded scores from 0-54. Individuals with scores 0-26 were classified in the low functioning group, while individuals with scores from 27-54 were placed in the high functioning group. Type of residential placement was defined as either an institutional or community-based setting. An institutional setting is a residential facility with more than 20 other severely handicapped persons. A community-based setting includes the family home, a small group or foster home.

The graph entitled Sampling Matrix displays the number of severely and profoundly retarded persons selected for the final standardization study. An attempt was made to identify eight subjects for each of 16 compartments in the matrix (4 X 4). Contacts were made in the states of Oregon, Washington, and California. It was difficult to locate high functioning, young, females and institutional settings. High functioning young females and older males in institutional settings were difficult to locate, as were low functioning, young, females in community settings.

SUBJECT SAMPLING MATRIX

		HIGH FUNCTIONING		LOW FUNCTIONING		
		Institution	Community	Institution	Community	Total
13-21 years	M	7	8	6	8	29
	F	3	8	8	5	24
22-40 years	M	7	8	8	7	30
	F	8	8	8	6	30
Total		25	32	30	26	113

Training of Examiners. A total of five examiners, three males and two females, participated in the standardization study. All of the examiners had at least five years experience teaching severely and profoundly retarded persons. Training of examiners was conducted utilizing a combination of reading, modeling of procedures by the Principal Investigator, simulated practice by the examiners, and practice of examiners with retarded persons.

Each examiner was given one copy of a document describing all testing procedures, and a copy of both forms of the assessment instruments. Examiners were asked to read and familiarize themselves with the materials. Next the Principal Investigator demonstrated and discussed the basic procedures with examiners across a wide range of test items. This modeling exercise was followed by examiners practicing test administration with each other. The Principal Investigator provided detailed feedback on examiners performance during this practice session. Once examiners reached a high level of proficiency with test item format and procedures they practiced each form of the test with severely and profoundly retarded persons. Data on fidelity of procedural implementation was collected by the Principal Investigator during this final practice session. All five examiners reached at least .90 agreement of procedural implementation during this session. The examiners were then considered competent to implement the standardization study with actual subjects.

Testing Schedule. The schedule for testing each subject was organized to minimize potential sources of bias or error due to examiner or testing order. A counterbalance design was utilized to systematically vary order of test form, sequence of testers, age, sex and functional level. Each subject received both forms of the test in a pre-specified order. Each examiner also

administered equal numbers of tests to males and females, adolescents and young adults, and persons of different levels of functioning. This schedule of testing controlled for error associated with the testing situation.

Time Limits on Testing. Both forms of the assessment scale include 28 test items. Each test was designed to take approximately 30-35 minutes for administration. A 40 minute time limit on testing any given subject was established to control for the effects of fatigue on performance. Examiners were instructed to administer an entire test in one session, if possible. If a subject was obviously not going to finish in 40 minutes, examiners were instructed to terminate testing after the 16th item and complete the test in a separate testing session.

Validity Study. A concurrent validity study was designed to assess the relationships between test scores on the CLAS and the results of training on a range of daily living tasks. Training tasks were selected for the validity study using three stratifiers: unit length, complexity, and daily living skills content. Two tasks each were selected at the core skill, cluster, and extended cluster unit lengths. There was one simple task and one complex task within each level.

Project staff individually trained a random sub-sample of 50 severely and profoundly retarded persons who were tested during the standardization study. Training on the validity tasks included instruction at three varying levels of assistance. Each subject was trained in a prespecified order starting with the easy core skills and progressing through the difficult extended clusters. Training on a task continued until two consecutive correct responses occurred on each task, or the number of unsuccessful trials

reached a point where it was safe to assume that further similar training would not facilitate criterion acquisition.

Training utilized three levels of assistance: verbal cues, modeling, and clinical instruction. For example, the easy core skill required the subject to simply push the plunger on a standard spray bottle. The examiner/trainer would say, "Andy, push the plunger." If the verbal direction failed to produce criterion performance, the trainer repeated the verbal cue two more times. If the three verbal cues failed to produce criterion performance, the trainer provided five trials of modeled instruction. If modeling failed to produce criterion performance, clinical training was initiated. In clinical training, the examiner/trainers were instructed to provide as much assistance as was necessary to teach the skill. The core-skill tasks permitted 20 clinical trials, the cluster tasks 10 trials and the extended cluster five trials of clinical training prior to termination. This varied exposure to clinical trials was designed to provide a maximum opportunity for low functioning persons to learn. Data was collected on the number of trials and number of errors to criterion acquisition during the validity study.

Summary of Results. In order to determine the psychometric characteristics of the dual forms of the assessment instrument, several correlational analyses were conducted. The internal consistency of a scale is a major psychometric concern with assessment instruments. Coefficient alpha, a conservative measure of internal consistency, yielded .96 for Form A and .94 for Form B of the assessment system. A second analysis was run between Form A and B of the scale and yielded a .82 correlation between the forms.

The outcome of the validity study was also analyzed to determine the relationship between scores on Forms A & B of the assessment scale and trials to criterion acquisition on the validity tasks. The relationship between Form A and validity outcome was .74, while Form B correlated .72 with validity outcome. This strong, positive relationship between assessment and training indicates that the CLAS is in fact assessing the subject's response to instruction.

The final form of the CLAS will be disseminated through appropriate publication mechanisms.

The Curriculum

There are five major philosophical orientations which have guided the development of the CLATS. These include the principle of normalization; the need to teach functional skills in a direct manner; the potential for all persons to acquire new skills; and the concept that learning is the result of an interactive process between the individual and the environment.

Normalization

An important influence on the CLATS is the principle of normalization (Wolfensberger, 1972). This principle states that society should "utilize means which are as culturally normative as possible, in order to establish and/or maintain personal behaviors and characteristics which are as culturally normative as possible" (p. 28). According to this principle, the role of the special educator is to develop procedures and create environments so that each individual can maximize his/her developmental potential.

As a direct result of the normalization principle, this curriculum emphasizes teaching basic skills which all members of our society share. In addition, the principle of normalization has shaped the development of teaching procedures which are not only overly obtrusive or restrictive. Finally, it has influenced the primary goal of the curriculum: active participation of all members of society in integrated physical and social environments.

Direct Teaching

Another key element of the CLATS is the belief that severely and profoundly retarded persons must be taught in a direct, unambiguous manner. Severely handicapped persons have much difficulty learning. This difficulty may be a result of poorly designed teaching programs, or tasks with a lack of relevance for the learner. When students fail in instruction, teachers often attempt to make the skills easier or change the content of instruction. All too often, teachers present tasks such as matching blocks, stringing beads, or playing with toys in an attempt to teach critical "prerequisite skills." The belief is that these prerequisite tasks in turn will assist the learner in acquiring the needed skills for more functional tasks. This is often not the case. (Englemann, S., Becker, W., and Thomas, 1975.)

The CLATS is structured so that functional self-care and domestic skills are taught directly to the learner. Walking a balance beam or throwing a ball will not help the learner to brush his or her teeth. In the CLATS, basic skills such as grasping the toothbrush, rubbing the teeth and turning the water faucet, are presented in the context of an actual, functional task. Low functioning learners learn content that has direct, functional relevance for their lives.

Functional Skills

A key element of a curriculum model for severely handicapped individuals is functionality (Guess, et al., 1978). Eating, personal hygiene, dressing household management and food preparation were chosen as the major content areas for the CLATS. These skills are typically performed on a daily basis across a number of adult environments.

The "criterion of ultimate functioning" (Brown, Nietupski, & Hamre-Nietupski, 1976) has been the underlying principle guiding the selection of this content. This principle emphasizes the needs to teach first those skills essential to survival in the community. Present and subsequent home environments in which severely handicapped persons may function provide the basis for selection of content. The skill requirements for community environments have been systematically analyzed to allow for an in-depth selection of content within each domain.

Functionality guided not only selection of content but also the teaching techniques used in the CLATS curriculum. Tasks are taught within the context.

Interactive Process

Another major philosophical basis for the CLATS is that learning is an interactive process between the individual and the environment. Much of the credit for this position must be attributed to Piaget (1954, 1962) and his theory of normal development in children. In this theory, Piaget notes that cultural experiences are necessary for development and that certain skills are prerequisites for future skills. Piaget argues that attention be given to the effects of environmental variables upon learners, as well as on a general sequence of development.

Piaget's observation of basic skills as building blocks for more complex actions provides a logical framework for sequencing daily living skills instruction. The first tasks taught are those like "Turns on Water," which would be integrated into more difficult activities such as "Bathes," "Showers" and "Washes Dishes." On the more molecular level, single actions like grasp and pull are taught across a wide range of functional objects, thereby increasing the probability that the learner will more quickly acquire novel or more complex skills containing similar actions.

Piaget's contributions on the effects of environmental variables has profound implications for teachers of handicapped learners. As integral components of the educational environment, teachers exert an undeniable influence on the continued development of their learners. This influence is positive to the extent that we are sensitive to the interactive nature of the teaching/learner process. Our instructional techniques are strongly grounded in the belief that it is the teacher's responsibility to continually evaluate the effects of his/her behavior on the learner, and to alter instruction accordingly.

Empirical Basis for the Community Living Assessment and Teaching System

The CLATS has been influenced by several teaching techniques developed in the past 15 years. Some of these techniques are deceptively simple; others require complex decision-making. Major instructional techniques used extensively throughout the CLATS include: (1) use of task analysis to divide a task into small components; (2) use of varying levels of assistance to teach a task while minimizing dependence on the trainer; (3) massing trials

to teach difficult steps; (4) teaching discriminations through correct and incorrect examples; (5) programming for maintenance through use of routines and charts; (6) programming for generalization by varying teaching materials, settings and other environmental cues.

Task Analysis

One of the basic foundations of the CLATS is the process of task analysis (Gold, 1972). Task analysis is simply a method of reducing large skills or tasks into smaller, teachable units.

In the CLATS each task is organized as a series of functional motor units. This allows instruction on small individual steps for naive learners or on longer skill sequences for more experienced learners. By teaching a task in small components, instruction may be presented at a level commensurate with the learner's ability. The amount of information taught at one time can be controlled so that success is more likely. Also, determine the relative difficulty of each step is easier if the task is broken into small units.

Use of Varying Levels of Assistance

Use of varying levels of assistance was first described by Lent (1972). Using this teaching technique, the teacher provides the least amount of assistance necessary for the learner to perform a skill. These levels include verbal directions, modeling and physical prompting.

There are two purposes for using this instructional technique in the CLATS curriculum. First, the learner always has an opportunity to perform each unit of a skill and have the satisfaction of successful completion. Second, the teacher's assistance can be reduced by specifying successively

less obtrusive means of assistance. It allows the teacher to fade assistance while building more independent performance.

Massed Practice

Another important innovation in teaching functional skills to severely handicapped persons is the procedure of repeatedly performing critical steps or massing practice to facilitate skill acquisition. Foxx and Azrin (1973) initially developed this massed practice procedure in the context of teaching toileting skills to profoundly retarded persons. Bellamy, Peterson and Close (1975) further refined these procedures for vocational tasks.

Massed practice is a key element of the CLATS because of its utility in teaching difficult steps to severely retarded individuals. The learner is required to repeatedly perform the steps of a task within a restricted time range. This allows teachers to concentrate instruction on a few skills within the context of a whole task. The more opportunities the learner has to practice a specific skill, the more quickly the skill will be acquired.

Discrimination Training

Another innovation included in this curriculum is a consistent method for teaching difficult discrimination skills. This discrimination training procedure was initially developed by Englemann and Carnine (1978). Using this procedure, the teacher demonstrates the rule or required skill and presents a variety of correct and incorrect examples. For example, "this is a clean window." It is followed by examples of "clean" and "not clean" windows. The purpose of this teaching technique is to emphasize the specific characteristics which the learner must perceive in order to make difficult discriminations.

Maintenance

Skill maintenance, or the continued performance of an acquired skill over time is essential for successful daily living. In spite of the fact that maintenance is identified as a major problem for severely handicapped persons, few efficient procedures are available for use in teaching. The CLATS lesson plans attempt to fill this void by specifying a variety of procedures which have been used to successfully teach skill maintenance to severely handicapped persons. These procedures include establishing daily and weekly routines as a part of training and the use of individualized charts as prosthetic cues for performance of acquired skills.

Generalization

Skill generalization, or the performance of a skill under different, non-training conditions is rarely accomplished when teaching severely handicapped persons. This is especially true with respect to daily living skills, which by definition must be performed in a variety of settings, with different materials, and under different environmental conditions. In their now classic study, Stokes and Baer (1977) offer a set of procedures to facilitate skill generalization. The CLATS has incorporated many of their recommendations into the format of the curriculum. They include: (1) teaching daily living skills in the curriculum environment; (2) varying materials in instruction; (3) varying cues and teachers; and (4) varying settings.

Overview

of the

Curriculum

The philosophical and empirical framework outlined in the Introduction has been directly incorporated into the individual lesson format in the curriculum. The curriculum content embodies the philosophical orientations of normalization and functionality. The interactive process of teaching is manifest in each lesson as a combination of the techniques of task analysis, massed practice, and the use of varying levels of assistance. Strong emphasis is placed on generalization and maintenance. Discrimination training methods are used frequently in Suggestions for Difficult Steps.

Content

The two major sections in the CLATS curriculum are Self-Care Skills and Domestic Skills. Self-Care includes three domains: eating, dressing, and personal hygiene. Domestic includes two domains: household chores and preliminary skills for food preparation.

The Self-Care section was designed for naive learners, and for those who have few skills in their repertoire. Tasks are designed to be taught at the step-by-step level. Emphasis is placed on acquiring basic motor operations like grasping, turning, and pulling within the functional context of skills necessary for daily living. These basic operations are later chained into larger segments of the task before the whole task is achieved.

The Domestic section was designed for more experienced learners, and for those who have already mastered many self-care skills. Tasks are generally longer and more difficult in this section. Many of the tasks are designed to be taught in larger segments because it is assumed that learners who are performing skills on this level have mastered many introductory

operations. Finally, emphasis is placed on independent performance of newly learned skills rather than on acquisition. It is assumed that although more capable learners will acquire these skills fairly readily, continued correct and independent performance of the skill under a variety of conditions may still be a problem.

The Lesson Plan Format

Each lesson format has four major parts: a section describing how to organize the teaching session; Phase I, Mastering Individual Units; Phase II, Chaining Units Together; and Phase III, Independent Performance. The flow diagram on page is a schematic representation of Phases I, II, and III.

Organization of the Teaching Session

The first section of each lesson plan contains information necessary to prepare for actual instruction. This section on objectives, entry behaviors, task analysis, materials and set-ups is designed to assist teachers in creating optimum learning conditions for each individual task. Attention to the details presented will help guarantee that learners acquire skills as quickly as possible with a minimum of errors.

The terminal objective is clearly stated and includes criterion for successful completion of each task. Entry skills are recommended for longer, more complex tasks. Entry skills are recommended for longer, more complex tasks. General suggestions are provided for optimal teaching times and relative positioning of teacher and learner.

FOLDS TEE-SHIRT

OBJECTIVE

Condition	Behavior	Criterion
Given a tee-shirt, lying face up and flat on surface,	the learner will fold the shirt into a neat square or rectangle	on 4 out of 5 trials in each of two consecutive sessions.

TASK ANALYSIS

	Steps		Clusters
1.	_____	Grasp sleeve with pincer	a: "Fold the sides together."
2.	_____	Grasp bottom of the same side of shirt with other pincer	
3.	_____	Fold to opposite side so sleeves and edges match	
4.	_____	Grasp bottom of shirt bimanually	b: "Fold the bottom up."
5.	_____	Fold bottom edge even with top edge	
		(Repeat steps 4-5 to fold to desired size)	c: "Fold the bottom up again."

MATERIALS

Use shirts that belong to the learner.
Begin with:

--short sleeved tee-shirts of soft material, that vary in color

Introduce:

--long sleeved shirts of stiffer materials, that vary in color

Task Analyses. Each task has been broken into a series of functional "units" called core skills and clusters. Core skills are the most basic motor behaviors necessary to perform skills. The tasks in this curriculum have been analyzed using 13 core skills: grasp, insert, push, pull, turn, etc. A list of core skills and their definitions appears in pages 9 and 10.

Clusters are "functional units" of behavior which consist of one to four contiguous core skills. Each cluster constitutes a teachable segment of a whole task and contains one step that is clearly an action step. For example, grasping a shirt on the sleeve and the bottom corner, and folding it to the opposite side is a cluster. The two grasps are preparatory steps to the action step of folding.

Skills which are longer, more difficult to perform and intended for more experienced learners are analyzed into core skills and then divided into clusters and extended clusters. Extended clusters are longer functional units of behavior which consist of two or more contiguous clusters. They are used as an intermediary stage in chaining from clusters to the whole task. Extended clusters are readily observable in long tasks. For example, in "Bathes," there are six extended clusters: turning on the water and filling the tub, getting into the tub and sitting down, washing and rinsing the body, getting out of the tub, drying the body and hanging up the towel, and letting the water out of the tub.

The three levels of functional units have been designated to facilitate instruction. Each unit is a teachable segment of the skill which allows the teacher to individualize the frequency of cues and reinforcement, and the amount of behavior required.

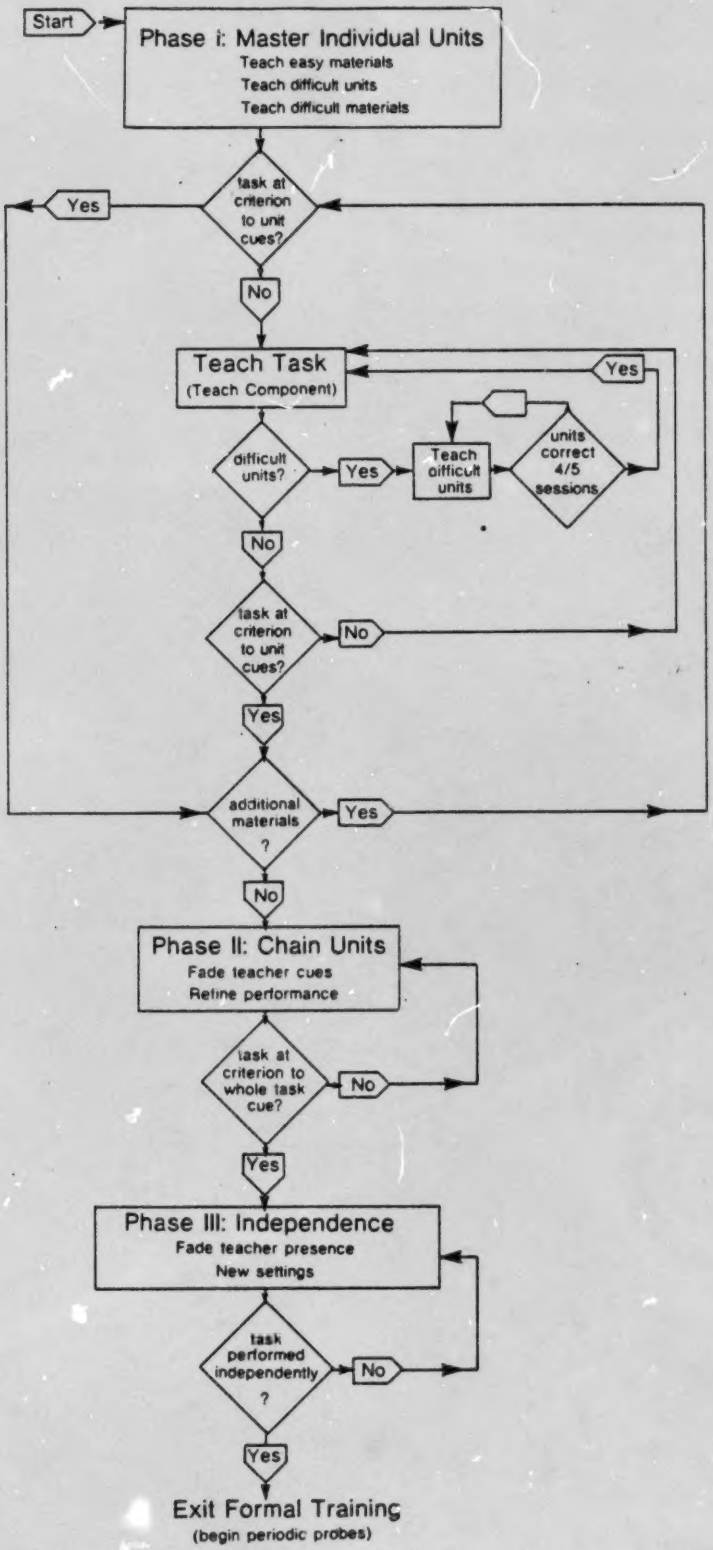
Materials. Research has shown that when severely handicapped learners acquire a skill using only one set of materials, the response often tends to be restricted to that specific set of materials. The CLATS attempts to facilitate generalization to other similar kinds of materials by teaching with a wide range of exemplars, and presenting them early in the acquisition.

Introducing the learner to a wide variety of materials early in the teaching process prevents the learning of distortions and increases the probability that the skill will generalize to similar materials and tasks. Using a wide range of materials during training increased the likelihood that similar skills with materials will not need to be retaught. For example, if the learner has been exposed to a range of shoes during instruction, it will not be necessary to reteach "Puts on Shoes" each time the learner buys a new pair.

Phase I

Phase I contains the "heart" of each curricular item. First, the learner's ability to perform each step of the task is assessed. Following the assessment are techniques for teaching the individual actions that make up a task.

Learners are instructed using a variety of easy and difficult materials. Suggestions are provided for those units which the learner has difficulty acquiring. At the end of Phase I, the learner is able to perform each unit (step or cluster) of the task to criterion with the most difficult materials and only verbal cues from the teacher.


Start
Phase I: Master Individual Units
Teach easy materials
Teach difficult units
Teach difficult materials
task at criterion to unit cues?
Yes
No
Teach Task
(Teach Component)
Yes
difficult units?
Yes
Teach difficult units
units correct 4/5 sessions
No
task at criterion to unit cues?
No
Yes
additional materials ?
Yes
No
Phase II: Chain Units
Fade teacher cues
Refine performance
task at criterion to whole task cue?
No
Yes
Phase III: Independence
Fade teacher presence
New settings
task performed independently ?
No
Yes
Exit Formal Training
(begin periodic probes)

Phase II

In Phase II, Chaining Units Together, the student learns to perform all the steps together in the proper sequence. Techniques for chaining separate units into longer segments and fading teacher assistance are provided in each lesson plan. Refinements are listed to ensure that Phase II criterion includes task preparation and clean-up, an acceptable level of accuracy, and an appropriate rate of response. At the end of Phase II, initial acquisition is complete, and the learner is able to perform the task, including refinements, in response to single verbal cue from the teacher.

You may well wonder why we specify "initial" acquisition. The adjective is necessary because skill training is by no means complete when the learner is bound to a teacher-delivered cue. It is of equal importance that the learner be able to perform each skill independently when it is demanded by the daily routine.

Phase III

Independent Performance, Phase III, contains techniques for teaching generalization and maintenance of acquired skills. Successful generalization and maintenance of skills depends largely upon the quality of teaching in Phases I and II because it is during initial acquisition that the stage is set for the expansion of each individual skill into a more complex repertoire of behaviors. Emphasis in Phase III is placed on performance of the skill under a variety of conditions and independent initiation of the skill. Finally, a series of rules are usually taught to indicate when it is appropriate to perform the skill.

Major Teaching Strategies

The major teaching strategy used in the CLATS is minimal assistance. In addition, emphasis is placed on fading assistance as quickly as possible and reinforcing appropriate behavior. These strategies are discussed in the Overview to provide a framework for the specific techniques discussed in the following chapters.

Minimal Assistance

The term "minimal assistance" refers to the judicious use of three levels of assistance which may be used to teach a new skill. The three levels include verbal cues and gestures, models, and physical prompts.

Verbal cues are short, direct statements to the learner which tell what to do next. Verbal cues may be provided on a whole-task level like "Brush your teeth," a cluster level like "Squeeze the paste on the brush," or a core skill level like "Pick up the brush." Gestural cues may be provided alone or in conjunction with verbal cues. They involve general hand movements to direct the learner's attention to the expected response. This is the least intrusive form of assistance and is used with learners who have well-developed verbal skills or with those who are already familiar with a task. Unfortunately, verbal cues are often not powerful enough to produce correct responses from severely retarded learners, especially during the early stages of acquisition.

The next level of assistance is a model. In modeling, the teacher demonstrates the correct response and the learner imitates the teacher's action. Models, like verbal cues, can be provided on a whole-task level

like putting on a coat, on a cluster level like placing arm in a sleeve, or on a step like demonstrating how to pick up the coat.

Learner who enter training without intact imitation skills can be taught this valuable learning strategy within the context of functional task acquisition. In situations where the learner does not perform the skill after a model or where modeling is unreasonably awkward, it is preferable to go directly from the verbal cue to the next level of assistance, a physical prompt.

Physical prompting is the most restrictive, but often the most powerful level of assistance. Physical prompts range from a simple touch to move the learner's arm in the right direction, to actually placing your hands over the learner's and totally guiding her/him through a series of manipulations.

Prompting is extremely effective in shaping new behaviors if it is used correctly. The trick is to understand the full continuum of possible teacher behaviors during prompting, and to give no more assistance than the learner requires to keep his/her performance flowing smoothly. Adjusting the intensity of a physical prompt to accommodate momentary changes in the learner's performance is called graduated manual guidance.

It is easy to see that the amount and specificity of physical prompts will vary considerably from learner to learner, task to task, trial to trial, and even unit to unit. The trainer must be prepared to constantly alter the amount of assistance, taking cues from the learner's immediate performance.

Minimal assistance means you let the learner attempt a response before you provide additional cues. Verbal and/or gestural cues are the least restrictive and also the least disruptive of task performance. If modeling or physical prompts are used, it is still important to use a verbal cue since the eventual objective is to bring all of the task under control of verbal stimuli.

Fading

Assistance of any type should be faded as soon as the learner begins to perform a unit correctly. Fading physical assistance involves gradually reducing the intensity, frequency or proximity of the prompt from the task. Provide less pressure in full physical guidance; prompt the beginning of the step and let the learner continue alone; position your hands further away from the learner's hands. "Shadowing" or closely following the learner's hands or arms with yours to prevent errors is another useful fading technique. Try various combinations of techniques. The relative success of each will depend on the individual task and learner.

Fading models involve primarily modeling larger chunks of behavior, modeling only the first part of the task and requiring the learner to do it all, being less exaggerated in your movements, and finally relying on verbal cues. As with fading physical prompts, be creative, and above all, be sensitive to small changes in the learner's performance.

The important point to remember is that fading levels of assistance is not an a priori decision, but part of the interactive teaching/learning process. Observe the learner and make decisions on fading based on performance. Fading assistance too quickly will result in response deterioration-

fading to slowly will encourage dependence on the trainer. Food trainers allow neither to happen.

We have only discussed fading modeled and physical cues. Specific information on fading verbal cues is provided in Chapter 6, Phase II.

Reinforcement

A reinforcer is anything that increases the probability that a given response will occur again. Reinforcement is used following correct performance of a step, a cluster, or a whole task.

Praise, pats on the back, handshakes and edibles are reinforcers typically used with severely handicapped learners. There are no guaranteed reinforcers. The learner's continued willingness to work on skill training tasks is the best indicator that your reinforcements are effective.

The best method for choosing reinforcers is to systematically sample the environment, and generate a variety of events, objects and conditions that are reinforcing for each learner. Be sure to include things that the learner requests spontaneously in the course of the daily routine, note activities, people and places to which the learner responds enthusiastically. Since no reinforcer will be effective all the time, it is advantageous to have numerous options available.

Reinforcements, like other forms of assistance, must be faded as the learner begins to acquire the skill. Specific information on fading reinforcement is provided in Chapter 6, Phase II.

Field Test of Curriculum

The purpose of the field test was to evaluate the impact and utility of the curriculum and the teacher's manual. A total of 60 teachers and 240 severely and profoundly retarded students participated in field test activities. Teachers were selected from classrooms for severely handicapped students in Oregon and California.

To implement the field study it was necessary to organize all of the information gained in the project into an in-service training format. Materials developed included: slides of teaching examples, overheads to illustrate teaching concepts and principles, a knowledge test on teaching procedures, an observational instrument to describe teaching competence, and evaluation forms to rate the effectiveness of the in-service experience. The design of the study included three major phases: pre-workshop data collection, a two-day in-service workshop, and a three-month follow-up period.

Pre-workshop Activities

The purpose of pre-workshop activities were to collect information on teacher competence, to assess the skill levels of students in teacher's classrooms, and to negotiate informed consent procedures with teachers and students. Each teacher filled out a pre-test on knowledge prior attendance in the workshop. The purpose of this pre-test was to determine the teacher's knowledge of skill training concepts and principles. Each teacher also completed a brief 18-item criterion-referenced test on each student in his/her class. The results of this instrument were to determine skill deficits and instructional needs of the students. This information was later used in negotiating actual teaching assignments of the teachers during the follow-up period.

In-service Workshop

An intensive two-day in-service workshop was conducted for 60 teachers of severely handicapped students. This workshop presented all of the teaching techniques and procedures included in the curriculum. The format for the workshop included: lectures by project staff, staff demonstrations of all teaching procedures, participant role-playing of all teaching procedures, and extensive feedback to participants on teaching competence. Prior to the conclusion of the in-service workshop each participant was observed by at least two project staff persons. The purpose of the observations was to collect information on the participant's competence to use the curriculum during the field test. The Teacher Observation Scale, which included 14 key teaching behaviors, was used to observe participant teaching competence.

Follow-up Activities

At the conclusion of the two-day workshop each teacher negotiated a follow-up schedule with staff members. Included in this negotiation were: which lessons from the curriculum would be used, which severely handicapped students would be taught with the lessons, how frequently follow-up activities would occur. On the average, each teacher was assigned 4-6 lessons from the curriculum. In addition, each teacher used the lessons with 5-7 students. Follow-up activities occurred once per month for three months with the group.

Following the three month follow-up period each teacher again filled out the Knowledge test, and was observed using the Teacher Observational Scale. A criterion of 90% on both scales indicated the teacher was sufficiently

knowledgeable and competent to evaluate the items assigned during the field test. All teachers filled out a copy of Evaluation of Curriculum Lesson Plans for each lesson assigned. This evaluation instrument used a 4-point Likert-type scale to rate the effectiveness and clarity of each component of the lesson plan. Anecdotal information on the lesson plan was also collected from each teacher.

The result of this activity was evaluation information that was used by project staff to revise and refine individual lesson plans. Generally speaking, the participants were enthusiastic about the curriculum in that over 90% of the responses on the Evaluation form were in the positive category. Areas of dissatisfaction were later revised by project staff. The product of this activity was a fully field-tested curriculum which will be disseminated through appropriate publication mechanisms.

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